TABLE M.3.4–1.—*Comparison of Potential Environmental Consequences of the No Action Alternative, Proposed Action, and Reduced Operation Alternative*

SSM PEIS[a]	No Action Alternative	Proposed Action	Reduced Operation Alternative
Land Use and Applicable Plans			
Determined land use for the NIF site.	Land use consistent with LLNL uses	No change to land use around NIF or LLNL	No change to land use around NIF or LLNL
Socioeconomics and Environmental Justice			
Socioeconomics			
330 long-term employees	400 total long-term employees 180 direct employees 220 support personnel	426 total long-term employees 186 direct employees 240 support personnel	367 total long-term employees 172 direct employees 195 support personnel
All new hires	Almost all already employed ~20 new hires	Almost all already employed ~46 new hires	All already employed reduction of 13 employees
	No construction employment	20 temporary construction jobs	No construction employment
No strain on local housing	No impact to local housing	No change to local housing	No change to local housing
One additional teacher One additional doctor	No impact to school or medical services	No change to school or medical services	No change to school or medical services
Environmental Justice			
No disproportionate impacts	No disproportionately high and adverse impacts	Same as No Action Alternative	Same as No Action Alternative
Community Services			
No change in fire or police services. Increased demand for general services	No impact in fire, emergency, police, or security services	No change in fire, emergency, police, or security services	No change in fire, emergency, police, or security services
Projected increase of 6,000 m^3/yr of nonhazardous waste. Represents a 100% increase in LLNL waste generation. (Overly conservative estimate: current site rate is 4,600 m^3/yr; NIF current rate is 380 m^3/yr.)	Most nonhazardous waste already being generated. Total of 400 m^3/yr. The increase of 20 m^3/yr would be ~0.4% of current site waste generation.	Most nonhazardous waste already being generated. Total of 426 m^3/yr. The increase of 46 m^3/yr would be ~1% of site waste generation.	Most nonhazardous waste already being generated. Total of 367 m^3/yr. The decrease of 13 m^3/yr would be ~0.3% of site waste generation.

TABLE M.3.4–1.—*Comparison of Potential Environmental Consequences of the No Action Alternative, Proposed Action, and Reduced Operation Alternative (continued)*

SSM PEIS[a]	No Action Alternative	Proposed Action	Reduced Operation Alternative
Prehistoric and Historic Cultural Resources			
No impacts projected	No impacts projected	No impacts projected	No impacts projected
Aesthetics and Scenic Resources			
Impacts related to construction activities only	No impacts projected	No impacts projected	No impacts projected
Geology			
25 acres disturbed during construction of NIF	No new disturbance	Construction of neutron spectrometer will disturb 176,000 ft^3 of previously disturbed land	No new disturbance
Ecology			
No adverse impact to biological resources from construction of operation of NIF	No adverse impact	No adverse impact	No adverse impact
Air Quality			
Criteria Air Pollutants	% of LLNL		
PM_{10} 0.16 t/yr	PM_{10} 0.0042 t/yr 0.19	Same as No Action Alternative	Same as No Action Alternative
VOC 0.56 t/yr	VOC 1.18 t/yr 15		
CO 0.43 t/yr	CO 0.094 t/yr 1.7		
NO_x 1.79 t/yr	NO_x 0.076 t/yr 0.35		
SO_2 0.03 t/yr	SO_2 0.0017 t/yr 0.68		
Pb Negligible	Pb Negligible		
Hazardous/Toxic Air Pollutants			
No impacts from hazardous chemicals should occur because only minute quantities of hazardous VOCs are expected to be emitted.	Beryllium emissions below Toxic Air Contaminant threshold. No impacts from other hazardous/toxic air emissions	Greater beryllium emissions. Still below Toxic Air Contaminant threshold. No impacts from other hazardous/toxic air emissions	Beryllium emissions below Toxic Air Contaminant threshold. No impacts from other hazardous/toxic air emissions

TABLE M.3.4–1.—*Comparison of Potential Environmental Consequences of the No Action Alternative, Proposed Action, and Reduced Operation Alternative (continued)*

SSM PEIS[a]		No Action Alternative		Proposed Action		Reduced Operation Alternative	
Air Quality (continued)							
Radiological Air Pollutants							
Receptor	**Annual Dose**	**Annual LCF Risk**	**Annual Dose**	**Annual LCF Risk**	**Annual Dose**	**Annual LCF Risk**	**Annual Dose**	**Annual LCF Risk**
MEI	0.1 mrem	6.0×10^{-8}	0.04 mrem	2.4×10^{-8}	0.07 mrem	4.2×10^{-8}	0.03 mrem	1.8×10^{-8}
Population	0.2 person-rem	1.2×10^{-4}	0.26 person-rem	1.6×10^{-4}	0.29 person-rem	1.7×10^{-4}	0.24 person-rem	1.4×10^{-4}
Water							
Impacts would be minimal.			Impacts would be minimal.		Impacts would be minimal. Construction of neutron spectrometer would not contaminate groundwater.		Impacts would be minimal.	
Noise							
Noise from construction up to 69 dBA to offsite receptor			Noise equivalent to light industrial facility, ~85 dB		Noise equivalent to light industrial facility, ~85 dB Temporary noise during construction of neutron spectrometer		Noise equivalent to light industrial facility, ~85 dB	
Traffic and Transportation							
Traffic							
902 new trips daily on local roads from construction and operations employment			Most of employment in place. Less than 0.3 % increase in local traffic		Most of employment in place. Less than 0.4 % increase in local traffic		Slight reduction in current employment. Less than 0.3 % decrease in local traffic	
Transportation							
No impacts expected from routine transportation of tritium targets. No detectable levels of radiation outside of transport packages.			No radiation dose to drivers or public from routine transportation		No radiation dose to drivers or public from routine transportation Use of disposable inner containment vessel increases LLW shipments to NTS		No radiation dose to drivers or public from routine transportation	
Onsite transportation risks from tritium targets were assumed to be negligible compared to risks from offsite transportation.			No impact from onsite transportation		No impacts from onsite transportation, including movement of inner containment vessel		No impact from onsite transportation	

TABLE M.3.4–1.—*Comparison of Potential Environmental Consequences of the No Action Alternative, Proposed Action, and Reduced Operation Alternative (continued)*

SSM PEIS[a]	No Action Alternative	Proposed Action	Reduced Operation Alternative
Utilities and Energy			
Water Use			
152 million L/yr	27.6 million L/yr 3.5% increase in LLNL usage	27.6 million L/yr	Slightly less than 27.6 million L/yr
Energy			
122,640 MWh/yr	131,400 MWh/yr 42% increase in LLNL usage	131,400 MWh/yr	131,400 MWh/yr
Sewer			
18 million L/yr	13.2 million L/yr 5.2% increase in LLNL usage	13.2 million L/yr	Slightly less than 13.2 million L/yr
Natural Gas			
2.03×10^5 therms/yr	2.03×10^5 therms/yr 2.6% increase in LLNL usage	2.03×10^5 therms/yr	Slightly less than 2.03×10^5 therms/yr
Materials and Waste Management			
Materials Management			
Would involve use of radioactive, hazardous, toxic materials including deuterium, tritium, mercury, cleaning fluids, and caustic chemicals.	Would involve use of radioactive, hazardous, toxic materials including tritium, depleted uranium, activated particulates, beryllium, mercury, cleaning fluids, and caustic chemicals.	Would involve use of radioactive, hazardous, toxic materials including tritium, depleted uranium, activated particulates, beryllium, mercury, cleaning fluids, and caustic chemicals. Additional materials would include plutonium, HEU, lithium hydride, and greater amounts of beryllium. Polyvinyl toluene and lead would be used in the neutron spectrometer.	Would involve use of radioactive, hazardous, toxic materials including tritium, depleted uranium, activated particulates, beryllium, mercury, cleaning fluids, and caustic chemicals.

Waste Management (quantities in m^3)

LLW solid (liquid)	Mixed solid (liquid)	Hazardous solid (liquid)	LLW solid (liquid)	Mixed solid (liquid)	Hazardous solid (liquid)	LLW solid (liquid)	Mixed solid (liquid)	Hazardous solid (liquid)	LLW solid (liquid)	Mixed Solid (liquid)	Hazardous solid (liquid)
6.65 (1.6)	0.9 (5.0)	8.0 (4.6)	70 (1.6)	1.8 (5.1)	8.5 (6.3)	190 (1.6)	1.8 (5.1)	8.5 (6.3)	49 (0.95)	1.6 (3.5)	8.5 (6.3)

TABLE M.3.4–1.—*Comparison of Potential Environmental Consequences of the No Action Alternative, Proposed Action, and Reduced Operation Alternative (continued)*

SSM PEIS[a]	No Action Alternative	Proposed Action	Reduced Operation Alternative
Accidents			
For the bounding radiological accident **Median Meteorology** • Noninvolved worker population not calculated • 0.6 latent cancer fatalities to the offsite population **Unfavorable Meteorology** • Not calculated.	For the bounding radiological accident **Median Meteorology** • 0.00013 latent cancer fatalities to the noninvolved worker population • 0.00012 latent cancer fatalities to the offsite population **Unfavorable Meteorology** • 0.0013 latent cancer fatalities to the noninvolved worker population • 0.0018 latent cancer fatalities to the offsite population	For the bounding radiological accident **Median Meteorology** • 0.00045 latent cancer fatalities to the noninvolved worker population • 0.00033 latent cancer fatalities to the offsite population **Unfavorable Meteorology** • 0.005 latent cancer fatalities to the noninvolved worker population • 0.005 latent cancer fatalities to the offsite population	Same as the No Action Alternative.

Occupational Protection

Radiological Exposure

Receptor	Annual Dose	Annual LCF Risk	Annual Dose	Annual LCF Risk	Annual Dose	Annual LCF Risk	Annual Dose	Annual LCF Risk
Involved worker(s)	<10 person-rem	6.0×10^{-3}	<15 person-rem	0 cancers in population (calculated risk = 9×10^{-3})	<19 person-rem	0 cancers in population (calculated value = 1.1×10^{-2})	<10 person-rem	0 cancers in population (calculated risk = 6×10^{-3})
Noninvolved worker(s)	0.2 person-rem	1.2×10^{-4}	1 mrem/yr	6×10^{-7}	1 mrem/yr	6×10^{-7}	1 mrem/yr	6×10^{-7}
Public MEI	0.1 mrem	6.0×10^{-8}	0.24 mrem	1.4×10^{-7}	0.27 mrem	1.6×10^{-7}	0.16 mrem	9.6×10^{-8}
Population Dose	0.2 person-rem	1.2×10^{-4}	0.26 person-rem	1.6×10^{-4}	0.29 person-rem	1.7×10^{-4}	0.24 person-rem	1.4×10^{-4}

TABLE M.3.4–1.—*Comparison of Potential Environmental Consequences of the No Action Alternative, Proposed Action, and Reduced Operation Alternative (continued)*

SSM PEIS[a]	No Action Alternative	Proposed Action	Reduced Operation Alternative
Nonradiological Exposure			
Hazards in the NIF for workers would include chemicals, electrical shock, and industrial accidents.	Hazards in the NIF for workers would include chemicals, beryllium exposure, electrical shock, and industrial accidents.	Hazards in the NIF for workers would include chemicals, beryllium exposure, electrical shock, and industrial accidents.	Hazards in the NIF for workers would include chemicals, beryllium exposure, electrical shock, and industrial accidents.

Source: Original.
[a] DOE 1996b
CO = carbon monoxide; dBA = decibels, A-weighted; ft^3 = cubic feet; HEU = highly enriched uranium; L = liter; LCF= latent cancer fatality; LLNL = Lawrence Livermore National Laboratory; LLW = low-level waste; m^3 = cubic meters; MEI = maximally exposed individuals; mrem – millirem; MWh = megawatt hours; NIF – National Ignition Facility; NO_x = nitrogen oxidizes; Pb = lead; PM_{10} = particulate matter less than10 microns in diameter; SO_2 = sulfur dioxide; SSM PEIS = Stockpile Stewardship Management Programmatic Environmental Impact Statement; t = ton(s); VOC = volatile organic compound; yr = year.